LOTTERY GAME WITH PARI-MUTUEL PAYOUT

Field of the Invention

This invention relates generally to lottery games and, more specifically, to lotto games that are adapted to be played amongst a number of groups which may have different lottery pay-out rules.

Background of the Invention

Many different types of lottery games have been sold over the course of history in various jurisdictions. The "traditional" game has been sold for several hundred years. This game is based on the concept of a raffle. Generally, tickets are sold with unique numbers. The drawing mechanism is developed, often using balls, sometimes thousands of them, each with a unique number corresponding to a ticket. Other times individual digits for winning numbers are drawn from a series of machines. The drawings are held so that a large prize and subordinate prizes are paid according to the unique numbers drawn and delegated to a particular prize level. Sometimes subordinate prizes are paid for matching part but not all of the numbers as long as the digits being matched are a subset of the digits on the balls drawn in exact order.

Instant lottery tickets, also called scratch tickets, were invented in the second half of the 20th century. They utilize a secure printing medium with numbers or symbols covered by latex or some other material. The covering is scratched and players win prizes by adding up, lining up, or matching covered symbols. Various patents have been issued relative to the substrate, security precautions, symbol coverings, and play styles for these types of games. They now account for roughly half of lottery sales in North America.

Another type of lottery ticket is the pull-tab ticket. It utilizes layers of cardboard glued together, with one layer having a series of perforations to form tabs. As the tabs are pulled away from the ticket they

reveal symbols underneath and matching various combinations of symbols leads to the winning of prizes.

The last category of lottery type games are generally referred to as lotto games and are based on the concept of picking numbers. These games usually involve players picking their own numbers or using a computer or some other mechanism to chose the numbers, in an attempt to match the numbers against those drawn by the lottery. The lotto concept was originally developed in Italy about 1580. It evolved from bets being placed on which candidates were chosen at random to serve in the senate. The betting was so popular among the citizenry that the incidence of the drawings was increased and the names of senators changed to numbers.

One of the most successful lotto type games in modem times is commonly known as pick 3. Players choose three digits from zero to nine. The lottery chooses three digits from zero to nine. If the player's numbers match the lottery's numbers in exact order, a top prize is won. Other betting variations can be made where a player chooses to mach the two front digits, the two back digits, the first and last digit, or some combination of the above. The game was typically ran manually and illegally by crime networks for generations in large cities in the United States. State lotteries began to offer the game and computerized it so that it could be played efficiently on a daily basis. A similar game has been developed for matching four digits.

Another typical lotto game in the United States and much of the rest of the world involves establishing a field of numbers from one to X. A player chooses, say, six of these numbers. The lottery then draws six numbers and a top prize is won if all numbers match in any order. The odds of winning the top prize can be altered by making X a larger number. In doing so there will be fewer winners of the top prize, which allows lottery sellers to offer a large jackpot prize. The prize can further be enhanced if no winner is chosen in a particular drawing. The lottery is then able to bank part or all of the non-won prize money from a previous drawing and offer it as an incentive for sales in a subsequent drawing, by increasing the size of the jackpot. In typical

lotto games of this nature, subordinate prizes are also awarded for the matching of five, four, or even three of the six numbers drawn in any order. A typical prize structure for a pick 6 out of 30 game is to pay the jackpot prize if all 6 matches are correct, the approximate average odds of which are 1:593,775; pay $100 if there are 5 matches, the approximate average odds of which are 1:4,124; pay $10 if there are 4 matches, the approximate average odds of which are 1:144; and provide a free play if there are 3 matches, the approximate average odds of which are 1:15. Of course, the allocation of prize money to be divided is subject to selection or design for each ticket sold.

Keno is a lottery game in which the house draws a number of balls, say, from a group or field of balls that is larger than the number of balls selected by a player, but any match between the balls selected by the player to the balls drawn by the house counts. Lotto games are actually a subset of keno games; in lotto games, the number of balls drawn by the house or lottery equals the number of balls picked by the player.

In contrast, higher prizes can be offered by establishing a matrix of different size. If a game is chosen where the goal is to match 6 of 49, then a typical prize structure may be to pay out $2,000,000 if there are 6 matches, having an approximate average number of prizes for each drawing of less than one; $65,816.40 if there are 5 matches and a match with a bonus number, having an approximate average numbers of prizes for each drawing of 8; $1,784.80 if there are 5 matches, having an approximate average numbers of prizes for each drawing of 236; $68.10 if there are 4 matches, having an approximate average numbers of prizes for each drawing of 11,857; and $10 if there are 3 matches, having an approximate average numbers of prizes for each drawing of 213,760. A variation of this game with smaller top prizes but better odds is a pick 5 game, a game involving matching five numbers by the player's choice in the drawing in any order. There is also a variation with seven numbers.

Another variation on this concept has emerged in the last decade, typically called "rolldown" in the United States. In a rolldown lotto

game everything proceeds as in a typical pick six or pick five lotto game, as above, except that in the event that there is no jackpot winner, prize money that has not been won is allocated to smaller prizes rather than being banked to enhance subsequent jackpots. Therefore the lack of a jackpot winner provides money to enhance the size of the prizes for lower tier winners. A typical prize structure and relative occurrences for a pick 5 out of 55 rolldown game may be to pay the jackpot if all 5 numbers are matched, the probability of which is 1:3,478,761; pay $500 if 4 numbers are matched, the probability of which is 1:13,915; pay $10 if 3 numbers are matched, the probability of which is 1:284; and pay $1 if 2 numbers are matched, the probability of which is 1:18.

In some instances a bonus ball can be added to a lotto game to create a prize smaller than the jackpot prize but larger than any of the other prizes. So, for instance, in a pick six lotto game a player matches only five of the six numbers drawn by the lottery; however, the lottery has also drawn a seventh ball, the bonus ball, which if paired with any five of the six other numbers drawn by the lottery creates a prize intermediate between matching five and matching the six original balls drawn.

In the last decade a new high jackpot game was developed called Powerball® (Multi-State Lottery Association, West Des Moines, Iowa). It was emulated by the Big Game in the United States (now Mega Millions), by Powerball in Australia, and similar games introduced in other countries. Unlike lotto, where the player picks six balls from one to N drawn by the lottery, the player instead chooses five numbers from one to X, and one number from one to Y. The lottery then draws five numbers from one to X and one number from one to Y from separate drawing machines and prizes are awarded according to various matches. The Powerball® lottery game is a combination of two lotto games in one. Both games must be won to win the jackpot prize. It is also designed so that any player matching the single ball drawn from the one to Y device wins a prize. The concept has been extraordinarily

successful. Table 1 lays out a prize structure applicable to a typical Powerball® lottery game.

Table 1-Prize Structure for a Double Lottery (5/49 + 1/42) Game-One Play for $1

	Odds	Number of Winners	Prize Levels	Prize Cost	Prize % of Sales
Match 5+1	80,089,128.00	1	$46,762,840	23,381,420	29.1942
Match 5+0	1,953,393.37	41	100,000	4,100,000	5.1193
Match 4+1	364,041.46	220	5,000	1,100,000	1.3735
Match 4+0	8,879.06	9,020	100	902,000	1.1262
Match 3+1	8,466.08	9,460	100	946,000	1.1812
Match 3+0	206.49	387,860	7	2,715,020	3.3900
Match 2+1	604.72	132,440	7	927,080	1.1576
Match 2+0	14.75	5,430,040		0	0.000
Match 1+1	117.99	678,755	4	2,715,020	3.3900
Match 1+0	2.878	27,828,955		0	0.0000
Match 0+1	73.75	1,086,008	3	3,258,024	4.0680
Match 0+0	180	44,526,328		0	0.0000
Totals	1.00	80,089,128		40,044,564	50.0000
Overall Odds:	34.76	2,303,805			

Although the player is still only picking six numbers, drawing them from two separate fields can greatly increase the odds of matching all numbers correctly while maintaining relatively good odds of low level matches. The number of different intermediate prize levels that can also be offered is greater than that available for a pick six lotto game because there are more possible combinations of matches that can be made by the two separate fields and two drawing mechanisms. For instance, in a pick six game the only possibilities of matches are to ultimately guess six, five, four, three, two, one and zero numbers; a total of seven choices. Therefore only seven prize levels can be offered. However, with the concept of the Powerball® lottery game, there are eleven possible matches.

Because the odds of winning the Powerball® lottery game are so high (i.e., 80 million to one) the generation of frequent wins to amass cash substantial enough to keep players' interest requires a sizable audience of lottery customers. Therefore games with odds of this magnitude are particularly suited for multi-jurisdictional lotto games. The combined

population makes the game possible. A certain fraction of each ticket sold is pooled by each of the participating partners for purposes of establishing a jackpot prize pool. The size of the top prize and the odds of winning it go hand in hand. The ability to make the game dynamic depends on per capita spending over a large player base. However, as time progresses lottery players can become jaded to the size of the prize so the matrix must be changed to make the odds of winning a jackpot stiffer, sacrificing the frequency of jackpot winners. In other words, fewer but larger jackpots are won over the course of time. With a fixed population base eventually the number of jackpot winners may decline to the point where players may lose interest. Clearly the size of the jackpot is important in the United States, as has been demonstrated by United States lotteries. After achieving a new record jackpot, sales for lower jackpots generally are reduced, a phenomenon known in the Industry as "jackpot fatigue." For example, the Powerball® lottery game must now achieve a jackpot of $50 million to have the same sales that once occurred for a jackpot of $20 million.

So there exists a dilemma. Expanding the odds to increase the size of the jackpot works in the short term but causes players to become jaded and sales to decline over time. Meanwhile, raising the odds further reduces the number of jackpot winners as jackpot fatigue sets in and players lose interest in infrequent jackpots and sales decline. The solution is to expand the player population base while expanding the size of the matrix and increasing the odds for the top prize. Doing so increases jackpot size without adversely affecting frequency of wins. Doing so also has certain limitations, usually characterized by political boundaries. The multi-jurisdictional Powerball® lottery game has achieved its success by assimilating the cooperation of multiple United States jurisdictions. All of these jurisdictions operate under a common national flag with a common language and a common currency. For political reasons expansion appears to be limited within the United States and therefore it is desirable to partner with lotteries outside of United States borders. However, the expectations of players outside the United States, the regulatory systems

under which they operate, and limitations on the size of jackpot prizes pose an impediment to this matrix expansion. Furthermore, currency differences suggest that the size of prizes based on a fixed prize pool can vary from day to day from one jurisdiction to another, depending on the foreign exchange rates for the currencies in respective countries. Therefore, the challenge is to find a way to accommodate jackpot limitations, regulatory systems, and currency differences in such a way as to offer a game with enhanced value compared to existing games in all jurisdictions.

Summary of the Invention

According to a first embodiment, the present invention provides a prize pool for a lotto game played among a plurality of member lotteries in which at least two of the member lotteries are from diverse groups. The prize pool is comprised of a system of prize levels including a jackpot prize level and a subordinate prize level, wherein all member lotteries are eligible for the jackpot prize and wherein a first member lottery awards subordinate prizes having a pre-determined fixed monetary value and a second member lottery awards subordinate prizes on a pari-mutuel basis. According to a second embodiment, the lotto game is comprised of a plurality of levels of subordinate prizes. The second member lottery awards a first subordinate prize equal to a fixed percentage of a second subordinate prize.

Brief Description of the Several Views of the Drawings

Figure 1 is a diagram of the reporting of ticket sales in each of five jurisdictions in their own currencies to the game administrator at the close sales for a particular drawing.

Figure 2 is a diagram of the reporting of the number of winners at each prize level in each jurisdiction of Figure 1 to the game administrator after the drawing.

Figure 3 is a diagram of the reporting by the game administrator to each of the jurisdictions of the authorized payouts in each jurisdiction.

Figure 4 is a diagram of the payments to subordinate prize winners and to the Super Pool fund in four jurisdictions if there was no jackpot prize winner.

Figure 5 is a diagram of the flow of monies of the drawing resulted in a single jackpot winner in Jurisdiction B.

Detailed Description of the Invention

The amount of the jackpot prize and the subordinate prizes can be different in each participating jurisdiction. These subordinate prizes may be made pari-mutuel or fixed by jurisdiction. A determination is made of each prize level for each jurisdiction as per the rules set by that jurisdiction.

With reference to Figure 1, upon the close of ticket sales prior to a drawing, each lottery jurisdiction (i.e., Lottery A - E) reports to the game administrator its total sales for that drawing in its own currency and the number of chances for the jackpot that are sold. That currency is converted to a reference currency. Totals are made in the reference currency from all jurisdictions and allocated to the various prize levels in the common game. After the drawing, each lottery jurisdiction reports to the game administrator the number of winners at each prize level (Fig. 2), and a determination is made of whether or not the grand prize jackpot has been won. Each lottery is notified if there is a jackpot and thus a Super Pool winner for that drawing (Fig. 3). If no jackpot prize is won all subordinate prize winners in each jurisdiction or group receive payment as per the rules of each respective

lottery. The funds allocated to the jackpot prize are not awarded because there is no winner, and are held in trust or in escrow after being converted to the reference currency to form the Super Pool (Fig. 4). Note that it is anticipated that one or more financial institutions in each jurisdiction or group may receive money from ticket sales in that jurisdiction or country and payout or retain money, according to the game rules.

As subsequent drawings progress, the jackpot pool continues to increase until there is a jackpot winner in one of the jurisdictions. Each jurisdiction according to its game rules is allowed to set a payout ceiling. When a jackpot win occurs, another mechanism comes into play. Of course, there is the possibility of having more than one jackpot winner. The amount in the Super Pool at the time of the drawing is divided by the number of lotteries selling jackpot winners and distributed to the jurisdictions where the jackpot winning tickets were sold in equal shares. The amounts are reported to all participating jurisdictions. Each jurisdiction that does not have a jackpot winner pays the prizes for each prize level .

However, the jurisdictions that have one or more jackpot winners follow a different procedure. Each jackpot winner is paid and any share of the Super Pool remaining after the jackpot winning amounts are determined is used to supplement all subordinate prizes for that jurisdiction according to rates for that jurisdiction. Fig. 5 illustrates the process where there is a single jackpot winner in Jurisdiction B. The jurisdictions that have lower jackpot ceilings will have inflated, possibly greatly, their subordinate prizes for drawings when a jackpot winning ticket was purchased in their jurisdiction. Jurisdictions that have no jackpot ceiling forego the gain in subordinate prizes but capitalize on sales related to a high jackpot.

Table 2 is prize structure for a hypothetical lotto game similar to the Powerball® lottery game but with two numbers drawn from the second bin instead of one. The matrix is a 5/60 + 1/2/40, which is a combination of a lotto game wherein 5 numbers out of 50 are chosen and a

game, in the nature of what is sometimes in the industry called a keno game, in which the player may choose either 1 or 2 numbers out of 40. Given a sellout of the game where each chance purchased is unique, the prizes paid are illustrated according to rates where the percentage of sales allocated to that prize is specified in the right hand column.

Table 2 – Prize Structure for an Multi-Group (5/60 + 1/2/40) Game - One Play for $2

	Odds	*Number of Winners*	*Prize Levels Cash*	*Prize Cost*	*Prize % Of Sales*
Match 5+1	109,230,240.00	1.00	$65,817,661	$65,817,661	30.1279%
Match 5	5,748,960.00	19.00	250,000	4,750,000	2.1743%
Match 4+1	397,200.87	275.00	5,000	1,375,000	0.6294%
Match 4	20,905.31	5,225.00	1,000	5,225,000	2.3917%
Match 3+1	7,355.57	14,850.00	40	594,000	0.2719%
Match 3	387.14	282,150.00	10	2,821,500	1.2915%
Match 2+1	416.35	262,350.00	7	1,836,450	0.8406%
Match 2	21.91	4,984,650.00		-	0.0000%
Match 1+1	64.05	1,705,275.00	5	8,526,375	3.9029%
Match 1	3.37	32,400,225.00		-	0.0000%
Match 0+1	31.40	3,478,761.00	4	13,915,044	6.3696%
Match 0	1.65	66,096,459.00	™	-	0.0000%
Totals	1.00	109,230,240.00	Total Prize Cost:	$104,861,030	48.0000%
			Prize Reserve	$4,369,210	2.0000%
Overall Odds:	19.00	5,748,906.00	Return to Lottery:	$109,230,240	50.0000%

For a given size jackpot and jackpot ceiling, the size of the individual subordinate prizes paid from the Super Pool will be a function of the number of subordinate prize winners. Smaller jurisdictions will arguably have fewer winners to split the Super Pool and will have the largest prize inflation.

It is more than likely that different groups, and particularly different groups comprised of political jurisdictions, will have regulations in place concerning the structure and payout of lotto games within their group. For example, a group or jurisdiction may require that all lotto games played

within the group have a pari-mutuel structure and/or a minimum or maximum prize percentage payout, which may differ from the prize percentage payout chosen for the multi-group lotto game. For this reason, a new game design is proposed which would provide a multi-group lotto game allowing for different prize structures and different prize percentage payouts amongst the groups for the same game. In particular, the proposed game design would allow for participation by partner groups having pari-mutuel game payout structures and partner groups having fixed game payout structures at differing prize percentages.

The jackpot prize is very rarely fixed. Rather, the jackpot prize is based upon player participation and increases over periods of time during which the jackpot prize is not won and jackpot prize funds are rolled over from one drawing to the next. The subordinate prizes may, however, be set at fixed levels to encourage continued player participation even when the jackpot prize is at a relatively low level, as for example immediately following the jackpot prize being won. The actual prize percentage payout is variable and approaches a target level only over a statistically long period of time. For a group having a pari-mutuel structure, the subordinate prize amounts are not fixed but rather are variable as well. The prize percentage payout target is fixed and is achieved on a cyclical basis. The cycles may be marked in terms of time, for example, weekly, monthly, or yearly, or on a per-draw basis.

Table 3 lays out a prize structure applicable to a pari-mutuel partner group in such a lotto game.

Table 3-Prize Structure for a Double Lottery (5/49 + 1/42) Game-One Play for $1

	Odds	Number of Winners	Average Prize Levels (30yr GP)	Prize Cost	Prize % of Sales
Match 5+1	80089128.00	1	$46,762,840	$23,381,420	29.1942%
Match 5+0	1953393.37	41	$100,000	$4,100,000	5.1193
Match 4+1	364041.49	220	$1,000	$220,000	0.2747
Match 4+0	8879.06	9,020	$50	$451,000	0.5631
Match 3+1	8466.08	9,460	$50	$473,000	0.5906
Match 3+0	206.49	387,860	$6	$2,327,160	2.9057
Match 2+1	604.72	132,440	$6	$794,640	0.9921
Match 2+0	14.75	5,430,040		$0	0.0000
Match 1+1	117.99	678,755	$3	$2,036,265	2.5425
Match 1+0	2.88	27,828,955	$0	$0	0.0000
Match 0+1	73.75	1,086,008	$2	$2,172,016	2.7112
Match 0+0	180.00	44,526,328	$0	$0	0.0000
Totals	1.00	80,089,128	Total Prize Cost:	$35,955,501	44.8934
Overall Odds:	34.76	2,303,805	Return to Lottery:	$44,133,627	55.1066

The jackpot prize level (Match 5+1) is the same in all partner groups (Compare Table 1 to Table 6). The subordinate prizes, however, are generally lower and calculated according to a variety of methods, for example as a generally lower preset fixed percentage of sales. In this manner, the pari-mutuel group achieves a target prize percentage payout of approximately 45% per cycle, as opposed to the 50% prize percentage payout over a statistically long period of time illustrated in Table 1. The prize levels, however, are not fixed; the numbers represent averages per cycle. In order to maintain equity in the price of purchasing a chance in the jackpot prize in a pari-mutuel group versus the fixed payout groups, all partner groups maintain an equal contribution per chance sold to the jackpot prize pool.

A lotto game according to the present invention may also provide subordinate prizes for which each prize level is a multiple of another prize level. For example, a first subordinate prize level is funded with one fourth

the percentage of prize sales as the jackpot prize, a second subordinate prize level is funded with one fourth the percentage of prize sales as the first subordinate prize level, and so on. Table 4 lays out a prize structure in a pari-mutuel game in which each prize level is a multiple of another prize level.

Table 4-Prize Structure for a Double Lottery (5/49 + 1/42) One Play for $1

	Odds	Number of Winners	Average Prize Levels (30yr GP)	Prize Pool	Prize % Of Sales
Match 5+1	80,089,128.00	1	$46,762,840	$23,381,420	29.1942%
Match 5+0	1,953,393.37	41	$142,568	$5,845,305	7.2985%
Match 4+1	364,041.49	220	$6,642	$1,461,306	1.8246%
Match 4+0	8,879.06	9,020	$41	$365,286	0.4561%
Others	18,545.72	-	0	$0	0.0000%
Totals	1.00	9,282	Total Prize Cost:	$31,053,317	38.7734%
Overall Odds:	8628.43		Return to Lottery:	$49,035,811	61.2266%

Instead of allocating a particular percent of the prize pool to a specific prize category, the present design provides that a hierarchy of prizes calculated, post-number selection, which would take into account actual winners for each prize category and would establish that, for instance, a match 4+1 winner be paid 4 times what a match 4+0 winner is paid and 12 times what a match 3+1 winner would be paid, etc. This design ensures that it would be unlikely for a match 4+0 prizewinner to win more than a match 4+1 prizewinner.

Although the present invention has been described with reference to preferred embodiments, workers skilled in the art will recognize that changes may be made in form and detail without departing from the spirit and scope of the invention. In addition, the invention is not to be taken as limited to all

the details thereof as modification and variations thereof may be made without departing from the spirit and scope of the invention.